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 / Ruth Montalvo Date: 08/19/02

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Customer No. 026418

Docket No. GK-ZEI-3039/500343.20034

Applicant: Ulrich Simon et al. Group Art Unit: 2859

Serial No: 09/238,859 Examiner: G.Verbitsky

Filed: 1/28/99

For: Laser scanning microscope with AOTF

BOX AF
Commissioner for Patents
Washington, DC 20231

REPLY BRIEF

Sir:

This request is properly filed 2 months from the date of the Examiner's Answer dated June 18, 2002. A request for an Oral Hearing is also attached.

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REMARKS

The Examiner has not incorporated the grounds from the Final Rejection (paper no. 14) *by reference* for the single outstanding 103 rejection into the (10) Grounds of Rejection paragraph of the Examiner's Answer (paper no. 18) so Applicants have respectfully attempted to examine the Grounds to determine if any new grounds for rejection were presented. New grounds for rejection are respectfully alleged to have been improperly presented in the Examiner's Answer as discussed below.

I. The new grounds in the 103 rejection in the Examiner's Answer at paragraphs 10 and 11.

In comparing the 103 rejection of claims 2, 4-9 in the Final Action (see paper no. 14, pages 3-4) to the Examiner's Answer (see paper 18, page 4), the Examiner's Answer respectfully deletes the following reasoning from the 103 rejection, i.e., the below reasoning:

“Kemeny suggests to drive the AOTF at any desired frequency (col. 14, lines 22-23). Kemeny also suggests to drive the AOTF at a particular (in a broad sense, constant for at least a period of time) frequency to tune a particular wavelength band (col. 11, lines 58-59). The application of the particular (constant) frequency to the AOTF changes the direction of the propagation and polarization of the narrow wavelength band of the incident radiation, yielding two tuned radiation beams which diverge from each other and non-tuned radiation. The tuned wavelength can be used to analyze a sample (col. 2, lines 20-31).”

Ordinarily, changing the reasoning slightly of the rejection or omitting some of the reasoning might not matter to the appeal, or be would not be an impermissible new ground for rejection. **However, in this case the new changes in reasoning is an impermissible new ground for rejection in the Examiner's Answer** because, as described in the appeal brief at pages 11-18 in detail, there were significant deficiencies in that part of the reasoning. Therefore, the Examiner has appeared to delete all the language above from the reasoning in response to applicants' points made at pages 11-18, in order to avoid the issues. This is not permissible and

constitutes a new ground for rejection because the obviousness rejection is now substantially different from the obviousness rejection in the final rejection. MPEP 1208.01 is clear on this point,

“where the evidence relied upon in support of the rejection remains the same, a change in the discussion does not necessarily constitute a new ground for rejection.”

In this case, *half of the evidence for the 103 rejection in Final Action is deleted* because it was shown to be deficient by applicant, and rather than responding to these points by reopening prosecution as is proper, the Examiner has merely deleted evidence from the rejection. This is respectfully asserted to be improper under MPEP 1208.01 citing *In Re Kroenig*. Therefore, applicants respectfully assert that the Examiner's answer was improper, and that prosecution should be reopened.

A new ground of rejection is clearly seen by comparing the final rejection's 103 rejection (pages 3-4, paper no. 10) to the Examiner's answer rejection found at page 4, paper no. 18.

The final rejection made a broad largely not properly supported finding of obviousness comprising only one sentence for the entire rejection “Therefore, it would have been obvious...to add a temperature sensor, a heater, and a heater regulator, as taught by Kemeney, to the device with the AOTF disclosed by the prior art.”

Applicant noted these deficiencies and cited the relevant MPEP and case law in the Appeal Brief at pages 11-18, which are repeated and incorporated herein again by reference including proper and complete reasoning for establishment a prima facie case of obviousness under MPEP 706.02(j), reasonable specificity In re Sang Lee, etc. The Examiner has responded with a new ground for rejection at pages 4 of the Examiner's answer, paper no. 18.

Again this is improper under MPEP 1208.01, and additionally this new rejection is also deficient because no required discussion of a

1. reasonable expectation of success,
2. no motivation to combine found in the reference,
3. no teaching of all the claimed elements

has been provided by the new reasoning as required by MPEP 706.02(j) for the combination.

Also see In Re Sang Lee, US CAFC 00-1158 cited in the appeal brief by applicant which states that "the need for specificity pervades the authority."

Thus given the deficiencies discussed above and in the Appeal Brief, applicant respectfully asserts that all of the rejections of the Final Office Action and the Examiner's Answer are improper and should not be sustained by the Board of Appeals.

II. Response to Examiner's Arguments at page 5

In short, given the above points about citing an improper new ground for rejection, and the points made in the appeal brief at pages 11-18, the Examiner should reopen prosecution and find a laser scanning microscope reference which discloses the claimed features including "regulation of said AOTF to a constant temperature" because the Examiner is incorrect in that Kemeny *does not keep the temperature constant if it varies the temperature in a step wise fashion. While varying the temperature, the fact that Kemeny allegedly keeps the variances to +/- of 1° C once a variance is complete, does not matter if the temperature is being varied overall in step wise basis and therefore not maintained as constant overall.*

This was discussed in the arguments of the appeal Brief which are reproduced below.

III. The obviousness rejections of claims 2, 4-5, 7-8 and 9 are traversed below.

The USPTO rejects claims 2, 4-5, 7-8, and 9 in view of a combination of (1) the admitted prior art on pages 1-2 of the specification and (2) Kemeny, U.S. 5,039,855 under 35 U.S.C. §103(a).

Fundamental point made below: Kemeny teaches a spectrometer instead of a laser scanning microscope as claimed in the present invention, and also teaches the opposite teaching of purposefully varying temperature because it is a spectrometer and not a laser scanning microscope.

The obviousness rejections of independent claim 2, and its dependent claims 4-5, 7-8 are traversed below obviousness rejections of dependent claims 2, 4-5, 7-8, and 9 does not establish a prima facie case of obviousness as required under 35 USC 103(a) as described in detail in MPEP 706.02(j).

The reasoning at pages 3 through 5 of the Final Office Action concludes at page 4 that "it would have been obvious to one of ordinary skill in the art" ... to "add a temperature sensor , a heater and a heater regulator, as taught by Kemeny" to the device with the AOTF taught in the prior art in order to be able to provide corrections for variations in the temperature of the AOTF (Col. 13, lines 33-34) as suggested by Kemeny. And:

"It would have also been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by the Prior Art so as to drive the AOTF with a particular(constant frequency), as taught by Kemeny, because the application of the particular (constant) frequency to the AOTF changes the direction of the propogation and polarization of the narrow wavelength band of the incident radiation, yielding two tuned radiation beams which diverge from each other and non-tuned radiation, with the tuned radiation beams being then used to analyze a sample (col. 2, lines 20-31), as already suggested by Kemeny.

It is also important to note that originally the obviousness rejection was based on a combination of four references including the two references remaining. In the Office Action dated October 10, 2000, paper No. 6, at page 5, the USPTO explicitly admitted that:

"The Prior Art, Kemeny and Fay do not explicitly disclose an AOTF being kept at constant temperature."

Instead, a fourth reference **Nelson**, was cited for this teaching. Applicant respectfully traversed the Nelson teachings in the response filed January 19, 2001 without any amendment, and then in a reversal of logic in paper no. 10 at page 4, line 10, the USPTO decided that Kemeny did in fact suggest that limitation, i.e., Kenemy did disclose an AOTF being kept at constant temperature." and applicants were left with the rejection based on the two references now at issue. However, paper No. 10, and the Final Rejection, also significantly qualified and narrowly limited the USPTO reasoning by admitting that:

"Kemeny also suggests to drive the AOTF at *a particular frequency (in a broad sense*, constant for at least a period of time) to tune a particular wavelength band (col. 11, lines 58-59)."

Therefore, as a preliminary matter, applicants assert that first the USPTO admitted that Kemeny did not teach the limitation and now the rejection states that it teaches it in "a broad sense." However, 35 USC 103 requires all of the limitations of the claims be taught or suggested by the combination of references. With the demonstrated uncertainty in the USPTO reasoning above, applicants can reasonably conclude that this showing has not been made as required, and respectfully request that at least an additional reference be cited to support the USPTO's position.

Second, in regard to the Kemeny spectrometer (not laser scanning microscope) applicant emphasizes the following point as discussed further below in detail:

Kemeny teaches and suggests use of purposeful changes in temperature so that the spectral range can be varied in the spectrometer, and the temperature is therefore not kept constant as in claimed in present invention, i.e. a laser scanning microscope.

A significant difference is that in the Kemeny spectrometer, *the spectrometer irradiates the AOTF with a white light source (not a laser of a laser scanning microscope)* and selects a certain spectral range (wavelength) with the applied AOTF frequency. It is decisive for the Kenemy application that the spectral range of the working beam is changed via the frequency change. Therefore, frequency control by means of varying temperature control is required so that the spectral range can be varied through purposeful changes of temperature. This is the opposite teaching of claims 2 and 9, which both claim regulation of said AOTF ... to a constant temperature value." Claim 9 also claims a constant laser output, not a varying output.

This is because in a Laser Scanning Microscope, as opposed to the spectrometer of Kemeny, the AOTF is used to make collinearly superimposed laser lines with a bandwidth in the sub-nanometer range individually accessible, meaning that essentially narrow spectral ranges can be selected.

Since the detected signal in, for example, fluorescent microscopy directly depends on the irradiated laser power, a constant excitation intensity is of great importance. If it drops, the detected signal (interaction with the object/fluorescent molecule) drops. Important information about properties of the examined biological sample can also be gained from the signal strength (for example, the concentration of certain ions (Ca^{++}) during so-called ratio measurements, or the pH-value). In the examination of surface structures (confocal material microscopy), the detected intensity is an indication of the height of a structure. This means that a height profile can be determined from the intensity curve.

From this can be gathered that in a laser scanning microscope the frequency stability of an AOTF is of a great importance so that (opposite to what is done by Kemeny) the intensity of the output and excitation is maintained in a constant manner.

Therefore, the rejection at pages 3 through 6 of the Office Action of claims 2 and 4-9 and respectfully does not meet the standards for establishing a *prima facie* case of obviousness as required by 35 U.S.C. section 103 and as described in detail at MPEP 706.02(j) which is discussed in detail below.

The First Criteria: Motivation to Combine/Modify

The first criteria of a 35 U.S.C. §103 rejection as discussed in the Manual of Patent Examining Procedure, section 706.02(j) requires that the reasoning on pages 3 through 5 of the Office Action point to some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings.

The reasoning at pages 3 through 5 of the Office Action sets forth the teaching of the references: The Admitted Prior Art and Kemeny in combination and concludes at page 4 that it would have been obvious to one of ordinary skill in the art to "add a temperature sensor , a heater and a heater regulator, as taught by Kemeny to the device taught in the prior art in order to be able to provide corrections for variations in the temperature of the AOTF as suggested by Kemeny." However as noted above in the individual discussion of each reference, none of the references teach or suggest limitations of independent claims 2 or 9.

In summary of the above, this is because the cited Prior Art and Kemeny are admitted to not suggest keeping the temperature constant. Kemeny also teaches the opposite teaching of varying the temperature mainly because it is a spectrometer rather than a laser scanning microscope.

Therefore, none of the references teach or suggest all of the limitations of claim 2 or 9 as required by 35 USC 103. Therefore, at this time it, is respectfully asserted that there is no teaching or suggestion on the record of why it would have been obvious at the time of the invention for a person having ordinary skill in the art to view two references and then to develop the invention as claimed in independent claims 2 or 9 as discussed above. Rather, a hindsight analysis would be required, for example, why would someone in the laser scanning microscope art look to the spectrometer art which in this case purposefully varies temperatures, in order to find a means in the laser scanning microscope art to keep temperature constant as claimed.

Therefore, the "motivation to combine" criteria of section 706.02(j) of the Manual of Patent Examining Procedure is respectfully not met by the reasoning presented at pages 3 through 6 of the Office Action in regard to independent claims 2 and 9.

The Second Criteria: Reasonable Expectation of Success

The second criteria of the Manual of Patent Examining Procedure, section 706.02(j) states that there must be a reasonable expectation of success to incorporate the alleged "regulation of said AOTF to a constant temperature and its environment to a constant temperature value" limitation into the admitted Prior Art and Kemeny. However, as it has been noted above, that no actual disclosure, teaching or suggestion of the limitations of independent claims 2 or 9 is taught by any of the two references (which teach actively varying temperature or

teach nothing relevant) taken alone or in combination, it is respectfully asserted that no reasonable expectation of success can be based on a teaching that does not exist in the references or upon the opposite "temperature varying" teachings of Kemeny. Therefore, the second criteria of MPEP, section 706.02(j) is also respectfully not met by the reasoning presented of pages 3 through 6 of the Office Action.

The third limitation of MPEP 706.02(j) requires that the prior art references when combined must teach or suggest all the claimed limitations. As discussed above, it is respectfully asserted that the specific limitations of independent claims 2 are not taught or suggested or even disclosed by any of the two cited references when taken alone or together .

Therefore, in summary, it is respectfully asserted that the above discussion clearly shows that the criteria for establishing a *prima facie* case of obviousness as required by 35 U.S.C. section 103, and as described in detail at MPEP section 706.02(j), have not been met. Therefore, it is respectfully requested that independent base claims 2 and 9 be reconsidered and allowed.

Claims 4-8 depend from independent base claim 2, and are therefore also believed to be allowable. Thus, reconsideration and allowance of all of the claims is respectfully requested.

In sum, the reasoning is not specific enough and does adequately support the selection and combination of the references to render the claimed invention obvious. Instead, applicants respectfully assert that the final rejection is a conclusory statement based on an impermissible hindsight analysis. See MPEP 706.02(j). See In Re Sang Lee, US CAFC, 00-1158, decided January 18, 2002 which states that "the need for specificity pervades the authority" citing In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317. Also see "teachings of references can be combined only if there is some suggestion or incentive to do so" ACS Hops. Sys. Inc V. Montefiore Hosp. 732 F.2d 1572, 1577, 221 USPQ 929,933 (Fed. Cir 1984).

Also, applicants respectfully note that no "official notice" and/or an affidavit of the Examiner's personal knowledge is taken to support the USPTO's conclusory statements above to support the obviousness reasoning as required by MPEP 2144.03.

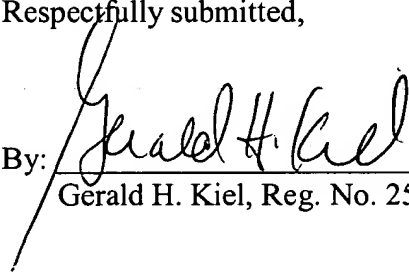
Therefore, the rejection is believed to be respectfully traversed at least because the requirements for an obviousness rejection were not met by the reasoning at pages 4-5 of the Final Rejection as is required.

PLEASE NOTE THE CHANGE OF ADDRESS.

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